

WellBeing International

WBI Studies Repository

3-1983

LD50: A Cruel Waste of Animals

Follow this and additional works at: https://www.wellbeingintludiesrepository.org/cu_reps



Part of the [Animal Experimentation and Research Commons](#), [Animal Studies Commons](#), and the [Other Anthropology Commons](#)

Recommended Citation

"LD50: A Cruel Waste of Animals" (1983). *Close Up Reports*. 26.
https://www.wellbeingintludiesrepository.org/cu_reps/26

This material is brought to you for free and open access by WellBeing International. It has been accepted for inclusion by an authorized administrator of the WBI Studies Repository. For more information, please contact wbisr-info@wellbeingintl.org.



CLOSE-UP REPORT

LD50: A Cruel Waste of Animals

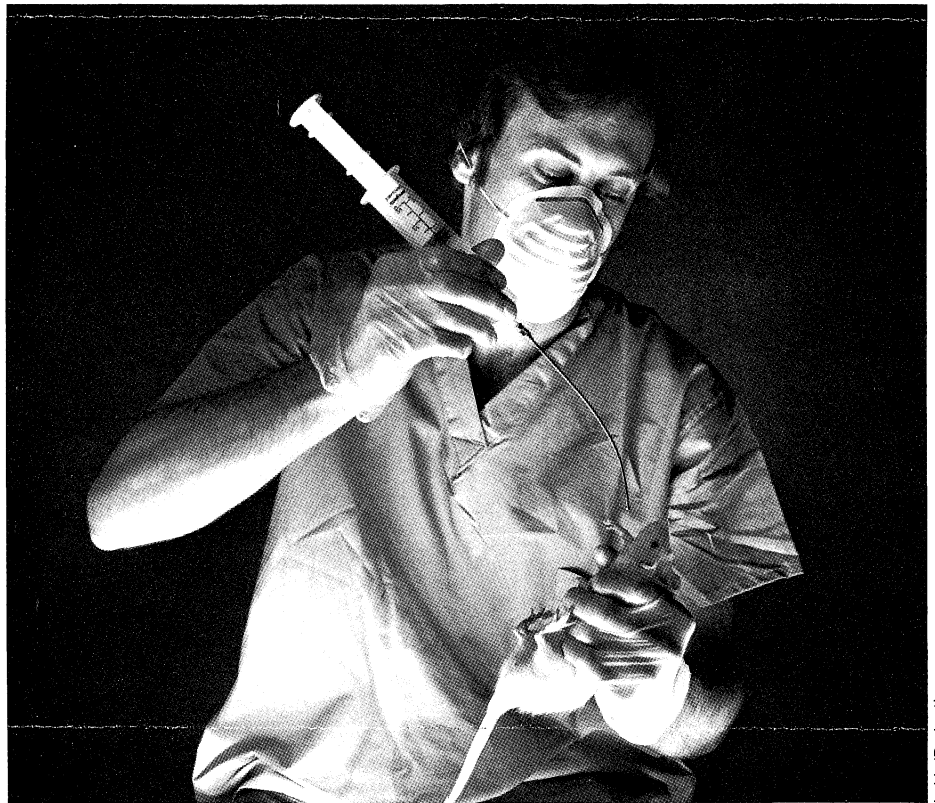
Imagine a test in which up to 100 animals are forced to consume a toxic substance in an amount high enough to kill half of them. Then imagine that the explicit purpose of the test is to kill those animals. Incredibly, such a test not only exists but each year also claims the lives of from two to four million animals.

The test is the lethal dose 50, or LD50 as it's commonly called. Its purpose is to measure the toxicity of a substance by determining how much of that substance will kill half of a group of some 60-100 test animals in a specific amount of time.

The HSUS believes that inducing untold suffering in animals in order to provide questionable data can no longer be tolerated. Here in Washington, D.C., we are spearheading a drive supported by hundreds of animal-welfare groups across the country to force the federal government to call a halt to this unconscionable activity.

The LD50 was developed in 1927 for the purpose of standardizing new batches of drugs to make sure that what was a safe dose from one batch would not be an unsafe one from the next batch. Over the years, however, use of the test has been broadened to the point where it has lost all its usefulness and become wasteful and arbitrary. For instance, one scientist actually used the test to find out the LD50 level of distilled water!

More and more scientists, however,



Lakin/Projections

The LD50 test is supposed to determine how poisonous a substance is in order to protect human safety. Yet one scientist points out that "The main information they give is an indication of the size of the dose required to commit suicide." At such a great cost of animal death and suffering, this is information we don't need.

are stepping forward to decry this test, once described by one consultant toxicologist for the World Health Organization as "a ritual mass execution of animals." What tests we *do* need, they say, should measure the safe doses of substances rather than the fatal ones. Yet many federal agencies still require that this death test be performed before new substances may be marketed or

transported across state lines.

While it is important for scientists to know how poisonous certain substances are, it is of little use to them to know the exact amount of a dishwashing detergent needed to kill half of a group of 100 rats. Late last year, the Pharmaceutical Manufacturers Association (PMA) called for the government to change its regulations to elimi-

nate the test from its requirements. "Seen as part of a battery of studies, the classical LD50 test which utilizes many animals to determine an LD50 value with mathematical precision lacks justification," the PMA stated.

The HSUS is calling for a two-step process for abolishing the LD50. First, we are calling on industry and the federal government to replace the LD50 immediately with a test for "approximate lethal dose" of a test substance. This would in and of itself reduce the number of animals used by up to 90 percent. At the same time, we are urging that a non-animal alternative be developed to replace animals in toxicity testing altogether. It will take immense public pressure to bring these changes about. It was such public pressure in 1980 and 1981 that forced cosmetic companies to devote several million dollars of research money towards finding a non-animal replacement for the cruel and inaccurate Draize test, in which laboratory rabbits have substances forced into their sensitive eyes to gauge irritancy. We can be proud of our achievements in leading industry to recognize that it must work to end the use of the Draize rabbit-blinding test. We must now do the same thing with the LD50.

What Is The LD50?

The LD50 is a test specifically designed to kill animals. That is its *raison d'être*. The test may be administered in a variety of ways. The internal LD50 involves force feeding the test substance. The inhalation LD50 involves forcing the test animals to breathe the test substance in a vapor or spray. In a dermal LD50, a portion of the test animal's coat is shaved and the substance applied directly to the skin. There are also intravenous LD50's in which the substance is injected into the animal and even LC-50's, which measure the lethal concentration of a substance in water and is tested on fish.

Internal LD50's are the most common. The researcher uses a syringe with a tube attached to pump the test substance directly into the animal's stomach.

Mice, rats, and guinea pigs are the most common LD50 victims. In a standard test, several groups of ten animals (five males and five females in each group) are given different amounts of the test substance. The animals may exhibit a variety of symptoms—including convulsions, paralysis,

tremors, and an inability to breathe. They are observed twice a day for two weeks and their symptoms recorded. The ones who die during the test period are dissected to see how the test substance affected their internal organs and systems. The ones who survive—who suffer the most—are also killed after the two weeks to be dissected and analyzed. From this data, using statistical charts, the LD50 value is determined. Then, the information is sometimes used as a baseline figure from which to do other toxicity studies. More often, however, the numbers simply go into a file, never to be studied or used again.

While it takes from 60 to 100 animals to determine a statistically precise LD50 value, it takes only 6 to 10 animals to determine approximately how toxic a substance is. Yet, outmoded and unscientific industry standards and federal regulations continue to call for the needlessly precise LD50 value when an approximate lethal dose value—using one tenth as many animals—would be just as useful.

Who Requires The LD50?

Among the federal agencies, only the Environmental Protection Agency (EPA) explicitly requires that LD50 values be provided for any new pesticide before it can be registered for sale. However, many other agencies, including the Consumer Product Safety Commission (CPSC), the Food and Drug Administration (FDA), and the Department of Transportation (DOT), while not actually demanding LD50's, do require explicit measures of toxicity—measures that in many cases can be met only by providing LD50 information. What's more, these federal agencies, despite scientist and industry pleas to end the need for massive numbers of LD50's, are refusing even to consider banning the test. A recent letter from a Department of Transportation official to The HSUS stated that its regulations "do not require determination of a precise LD50 or LC-50, only a determination as to whether a material has a toxicity at or below a certain breakpoint." On the other hand, he continued: "At present,

it is our view that the benefits of using the LD50 as the bench mark criterion for declaring that material is a poison...far outweigh the concerns expressed about using live animal tests."

It is clear that extreme pressure, not only from industry groups, but from animal-welfare advocates and the general public, must be brought to bear before these federal agencies will cease to require, explicitly or implicitly, this gruesome and needless test.

It is estimated that there are 4.8 million chemical entities known to man. When you consider that every year, tens of thousands of new entities are added to our lists, it's not hard to figure out why federal laws are needed to ensure that the public isn't subjected to hazardous substances in dangerous amounts. Unfortunately, however, both government and industry still focus on the LD50 as the definitive test.

Names and addresses of federal agencies that require or encourage use of the LD50

The Environmental Protection Agency
401 M Street, SW
Washington, D.C. 20460
Attn: Acting Administrator

The Consumer Product Safety Commission
1111 Eighteenth Street, NW
Washington, D.C. 20207
Nancy Harvey Steorts, Chairwoman

The Department of Transportation
400 Seventh Street, SW
Washington, D.C. 20590
Elizabeth Hanford Dole, Secretary

The Food and Drug Administration
Parklawn Building
5600 Fishers Lane
Rockville, MD 20857
Arthur H. Hayes, Jr., Commissioner

What's Wrong With The LD50?

A better question would be, what's right with the LD50. Tens of thousands of laboratory animals suffer *not* for the purpose of safeguarding the public but to provide evidence of safety-testing for any company marketing a new substance in case somebody is injured by that substance and decides to sue. Even worse, the test itself is not scientifically valid. LD50 values may be affected by an animal's species and strain, age, sex, diet, the amount of food deprivation prior to dosing, the temperature, caging, season, and experimental procedures. Even if, somehow, all those factors *could* be neutralized, it would not change the fact that information obtained from the LD50 test cannot be used to determine specifically how a substance will act in a human. For example, knowing that a substance has an LD50 value in rats of 122.4 units will enable a scientist to

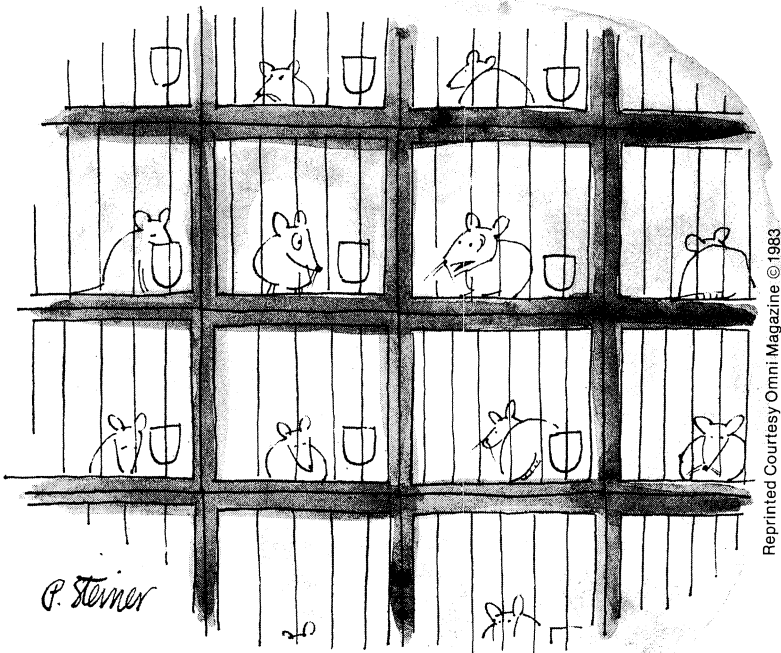
conclude only that the human lethal dose is somewhere between 12 and 1200 units of that same substance. Finally, the LD50 yields no information on the long-term effects a substance has in the body. And, as we have seen over and over again in the last few decades, it is the long-term exposure threat of most substances that poses the greatest risk to human health.

Thankfully, more and more scientists are realizing that there is no justification for a test whose sole purpose is to kill animals to produce information of dubious value. As long ago as 1969, one scientist noted that LD50 studies "are of little use and are expensive in animals. The main information they give is an indication of the size of the dose required [for a human being] to commit suicide."

In January of 1983, the government of West Germany recognized the idio-

cy of the LD50 and stated that it was prepared to reduce the number of animals required for the LD50 by 75 per-

cent, sparing an estimated 130,000 animals annually, according to a report in *The Economist* magazine.



"I've been fed laundry soap every day for the last six months, and it's made me sick. For some reason they find that remarkable."

In this country, shortly after the Pharmaceutical Manufacturers Association came out against the LD50, the National Society for Medical Research (NSMR) issued its own policy statement on the subject, stating that "It is the opinion of the NSMR that the routine use of the quantitative LD50 test is not now scientifically justifiedBecause differences do exist in the effects of drugs or toxins on different species of animals, or on newborn and mature individuals, it is more important to accumulate data on such differences. This can be done with the approximate LD50 measurements, still using fewer animals than are necessary for the precise determination."

Having government and industry realize how worthless the LD50 test is and getting them to actually stop using it, however, are two very different tasks. We must apply enough pressure to force those who now kill animals needlessly with the LD50 to seek a non-animal replacement for determining the toxicity of a substance.

What The HSUS Is Doing

The HSUS is determined to end the use in this country of the cruel and wasteful LD50 test. Because most of the LD50 testing that occurs in this nation is carried out in an effort to meet the regulations and requirements of certain federal laws, we are trying to convince federal agencies that they must recognize public sentiment against the wasteful destruction of research animals. We are marshalling scientific arguments against the LD50 and

seeking to ban the test. We have already contacted all the pertinent federal agencies requesting that they modify current regulations so as not to require the test. Should this not prove successful, we intend to file a formal petition proposing that they change

their regulations and end the use of the LD50.

We are also helping to lead a coalition of animal-welfare groups in efforts to bring to the public the horrors of the LD50. It may take a full public revolt to convince government

and industry that finding alternatives to the use and abuse of laboratory animals should be a major priority and that the LD50 is a particularly good candidate for the trash heap.



Lakin/Projections

WHAT YOU CAN DO

It was pressure from millions of citizens just like you that helped us convince the cosmetics industry of the importance of seeking an alternative to the Draize test. You can be just as instrumental bringing an end to the cruel LD50. Here are a few things you can do:

- Write to President Reagan (c/o the White House, 1600 Pennsylvania Ave., NW, Washington, D.C. 20516). Tell him to direct the EPA, CPSC, FDA, DOT, and other agencies that require LD50 information to change their policies and forbid use of the test for their purposes. Explain that approximate lethal dose information is just as useful and would save the lives of millions of laboratory animals.
- Write your U.S. representative (c/o House Office Building, Washington, D.C. 20515) and your senators (c/o Senate Office Building, Washington, D.C. 20510). Urge them to actively support and vote for legislation that encourages the development of non-animal alternatives for research. Such legislation could foster the development of a substitute not only for the LD50 but also for

thousands of other cruel and painful animal experiments that could be more cheaply and accurately performed without using animals.

- Try to avoid buying new products on the market. Unless the labels specifically say they were not tested on animals, all new consumer products, including many "new and improved" versions of old products, from toothpaste to oven cleaners, were tested at the expense of animal lives. Sticking with established products already on the market can cut down the need for LD50 tests until we have abolished them.
- Finally, help The HSUS help the animals. We are working not only to end the LD50 but also to find non-animal alternatives. Our work ranges from preventing shelter dogs and cats from becoming research subjects to ending the needless and cruel use of primates in the nation's primate centers. Your tax-deductible contribution will help us continue our programs to alleviate the suffering not only of laboratory animals but of other animals as well. Please use the enclosed postage-paid envelope to send your gift today.

The Humane Society of the United States
2100 L Street, NW, Washington, DC 20037 (202) 452-1100

Additional copies of this report are available upon request at 30¢ each. Payment must accompany order.

©1983, by The Humane Society
of the United States,
all rights reserved.